BUREAU OF
Entomology and Plant Quarantine
MAR 23 1951
PORTLAND, OREGON

Indexed

File No. 624.7
Noted by RLF. JMW N.J.B. FW A'D KHW. HLH. WKC

FOR ADMINISTRATIVE USE ONLY

FOREST INSECT CONDITIONS IN THE INTERMOUNTAIN REGION IN 1950

by

L. W. Orr

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine
Division of Forest Insect Investigations
Forest Insect Laboratory
Room 387 Federal Bldg.
Ogden, Utah
March 1951

BUREAU OF
Entomology and Plant Quarantine
RECEIVED
APR 5 1951
FOREST INSECT LABORATORY
PORTLAND, OREGON

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

File No.
Noted by

387 Federal Bldg., P.O.Box 731, Ogden, Utah

W. L. Robb, Asst. Reg. Forester, Ogden, Utah — April 3, 1951

L. W. Orr, Entomologist in Charge, For. Ins. Lab.,
Ogden, Utah

Western Pine Beetle, Boise and Payette National Forest

In my recent summary report on forest insect conditions in Region 4 I stated that ponderosa pine trees weakened by the needle cast fungus disease may be very susceptible to attack by the western pine beetle. I have thought that the present infestations by this beetle on the Boise and Payette Forests may be encouraged by the presence of fungus-weakened trees. However, Mr. Keen and Mr. Furniss, who are in charge of our forest insect laboratories at Berkeley and Portland, have called my attention to the fact that the western pine beetle did not build up to outbreak numbers in needle cast affected ponderosa pine stands on the Ochoco Forest and in other parts of the Blue Mountains region.

I sincerely hope that future developments in the beetle infestations on the Boise and Payette will follow the pattern established in the Blue Mountain area. Losses caused by the fungus alone are severe enough without the added drain that would be caused by an extensive beetle outbreak. While the Oregon experience is encouraging, I still believe that we should not minimize the importance of the western pine beetle infestations that we know are now present on the Boise and Payette. Certainly we have no assurance that they will soon decrease in intensity and if they continue at their present level or above they will result in gradual loss of valuable stands of mature timber.

I therefore believe that efforts should be made to harvest the infested stands as soon as possible. I also believe that artificial control is warranted in areas where it is impossible to begin cutting operations in less than two or three years, such as the Deadwood-White Hawk Basin area. Conversely, if there is no prospect of beginning a harvest cut in an infested area in less than five years the value of artificial control is questionable, since the benefits to be expected from artificial control of the western pine beetle are likely to be temporary.

I am enclosing two copies of this memorandum in case you wish to forward them to the Boise and Payette.

cc: Mr. Robb (2)
Mr. Keen
Mr. Furniss
Dr. Beal

STANDARD FORM NO. 64

File No.

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Office Memorandum • UNITED STATES GOVERNMENT

Noted by

387 Federal Bldg., P.O.Box 731, Ogden, Utah

RLF

TO :R. L. Furniss, In Charge, Portland Laboratory DATE: April 2, 1951

FROM :L. W. Orr, In Charge, Ogden, Utah Laboratory

SUBJECT:Forest Insect Conditions in the Intermountain Region in 1950.

Thanks for your letter of March 29 in which you add your support to Keen's statements about the failure of the western pine beetle to increase in numbers in needle cast-weakened trees in the Blue Mountains area. You fellows have me outnumbered and I'll pull in my neck, pending further observations. I sincerely hope that developments on the Payette and Boise Forests follow a pattern similar to that which you observed on the Ochoco. We do, however, have some rather threatening western pine beetle infestations at the present time and we shall want to watch them very carefully. These biological problems do not always follow the same sequence.

I wish you could join me for a day or two on the Boise sometime this summer but I suppose you are swamped with your spruce budworm control project.

L. W. Orr

cc: Dr. Beal
Mr. Keen

BUREAU OF
Entomology and Plant Quarantine
RECEIVED
☆ APR 4 1951 ☆
FOREST INSECT LABORATORY,
PORTLAND, OREGON

L. W. Orr, In Charge, Ogden Laboratory March 29, 1951

R. L. Furniss, Entomologist, Portland Laboratory

Forest Insect Conditions in the Intermountain Region in 1950

The recent exchange of correspondence between you and Keen is of interest to us.

As stated by Keen in his memorandum of March 23, extensive stands of ponderosa pine on the Ochoco National Forest and other parts of the Blue Mountains have been severely attacked in recent years by a needle cast fungus (Elytroderma deformans). Trees of all ages have been killed. Numerous sales have been made by the Forest Service to salvage the dead and seriously weakened trees.

Quite a number of people thought the fungus-defoliated trees would serve as breeding grounds for the western pine beetle. This did not prove to be the case. There was practically no increase of beetle infestation either in or around the centers of fungus activity. Now it appears that the needle cast fungus is on the wane.

At the height of the fungus epidemic it was fortunate that the severely defoliated trees were not especially attractive to the western pine beetle. Had they been heavily attacked by the beetle, a salvage problem of monumental size would have resulted. As matters worked out it was possible to mark for salvage only the dead and practically dead trees. Even this practice lead to seriously depleted reserve stands and in some cases to clear cutting.

We concur on the need for coordinating control recommendations in the various regions, particularly those that adjoin.

cc: Dr. Beal
Mr. Keen

RLFurniss:AH

BUREAU OF
Entomology and Plant Quarantine
RECEIVED
MAR 29 1951
FOREST INSECT LABORATORY
PORTLAND, OREGON

File No. _____

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE Noted by _____

387 Federal Bldg., P.O.Box 731, Ogden, Utah

F. P. Keen, In Charge, Berkeley Laboratory March 27, 1951

L. W. Orr, In Charge, Ogden, Laboratory

Forest Insect Conditions in the Intermountain Region in 1950

I am pleased to have your comments of March 23. I hope that others will read the report and give me similar constructive criticisms.

With respect to the relationship that the needle cast fungus may have to susceptibility of ponderosa pine to attack by western pine beetle, I believe that much will depend upon the speed with which the disease causes defoliation. I agree that sudden, severe defoliation results in an accumulation of moisture in the sapwood and phloem. I doubt that this has been true, in general, in the needle cast areas on the Boise and Payette. My impression is that the disease has been active for several years. Large mmbers of trees now appear thin-crowned but there has not been much actual killing in the affected stands, except where bark beetles are getting a foot-hold. We shall certainly give this problem some careful study this coming season.

I hope you did not get the impression that we are recommending artificial control as a general practice for preventing losses caused by the western pine beetle. In our reports on these infestations we have been careful to point out that artificial control has not been very satisfactory with this species. We are urging that overmature stands be harvested as rapidly as possible. Local forest personnel, as well as the Regional Office men, are anxious to have us give them suggestions for risk marking of timber sale areas. We hope to get Phil Johnson to give us some help on this problem this spring or summer.

In one area on the Boise, where we have a rather severe infestation by D. b. at the present time, we have recommended artificial control for a year or two pending completion of a proposed access road that will make it possible to remove the remaining stand. Two or three years will be required for building the road. If nothing is done to control the present infestation there is a good chance of losing a considerable part of the timber before the road can be completed. On the other hand, if construction of the road is not approved there is little point in attempting to save the timber.

Your point about the necessity of our making similar recommendations for similar problems is very well taken. I doubt, though, that we shall ever obtain complete uniformity because there are too many variations in the conditions with which we have to contend. Perhaps our Western Forest Insect Conference meetings will furnish an opportunity for discussions of control policy, either as part of the regular meetings or in special sessions among the survey and control men.

cc: Dr. Beal
Mr. Furniss

BUREAU OF
Entomology and Plant Quarantine
RECEIVED
☆ MAR 27 1951 ☆
FOREST INSECT LABORATORY,
PORTLAND, OREGON

File No.
Noted by RLF
JWW

Forest Insect Laboratory
29 Forestry Bldg., U. C.
Berkeley 4, California

March 23, 1951

To: L. W. Orr, Box 731, Ogden, Utah

From: F. P. Keen, in Charge, Berkeley Laboratory

Subject: Forest Insect Conditions in the Intermountain Region in 1950

I have just read your report on the above subject and found much of interest in it. The report is well prepared and gives a clear picture of conditions throughout Region 4.

On page 3 in respect to the needle cast fungus on the Payette and Boise National Forests, I note that you say these fungus-weakened trees will be made susceptible to attack by the western pine beetle. In answer to a similar question on this point in respect to vast areas of fungus-weakened and killed trees on the Ochoco National Forest in Oregon, I gave the opposite opinion to Forest Service officers. My reasoning was that where needles are killed and roots go on functioning, an excess of moisture accumulates in the phloem and sapwood. The western pine beetle doesn't like trees in such sappy condition but only those where bark and sapwood are dried out. My prediction was that no bark-beetle epidemic need be expected in these fungus-weakened stands and none did develop. The fungus itself killed out an entire drainage which had to be logged one hundred percent.

In reading these reports, I find there is a considerable difference, region by region, as to control recommendations for the same insect, which appears to be largely a matter of personal opinion of the entomologist making the recommendations. We also have differences within regions depending upon who makes the report. I suppose that some of this is inevitable, but it would be well if we could again review and come to some common agreement as to control policy as was done in 1931 by the Journal of Forestry article by Craighead, Miller, Evenden, and Keen.

The forestry public must wonder about us when one entomologist says to control and just across a regional line another entomologist says no, you mustn't control. There is a need for us to be a bit more consistent.

cc: Beal
Furniss

Forest Insect Conditions In The Intermountain Region

1950

by

L. W. Orr

The Intermountain Region, or Region 4 of the Forest Service, which includes southern Idaho, western Wyoming, Utah, and Nevada, has a long history of destructive forest insect outbreaks. The wide variety of forest types and climatic conditions within the area are probably largely responsible for the fact that most of the economically important insect species that occur in the West are to be found somewhere within the Region. A considerable part of the forest area is, or has been, relatively inaccessible, with the result that many extensive stands of timber have become overmature and more subject to insect attack. Lack of access roads has made the application of artificial control measures difficult and costly. The road system has been extended and improved rather rapidly within the last ten years coincident with the increasing interest in timber sales, recreational use of forest areas, and a better public appreciation of the need for developing and protecting the timber resources of the Region. It is therefore believed that with prompt detection of insect infestations in future years it should be possible to prevent major losses by applying control measures or by harvesting infested timber stands.

Establishment of a forest insect laboratory at Ogden, Utah, in July 1949, with funds provided under authority of the Forest Pest Control Act, has made it possible to give more adequate attention to forest insect problems in the Region. In former years the Region had to depend upon the forest insect laboratories located in Coeur d'Alene, Idaho, and Fort Collins, Colorado, for assistance; consequently, only the most pressing problems could be given attention. The new laboratory has a staff of only two permanent men at present but it is expected that funds for additional personnel will soon be provided and that attention can be given to research problems as well as survey and control work.

Present insect infestation conditions within the Region are not unduly alarming but their variety and character are such as to emphasize the need for intensive study and prompt action if serious losses of timber are to be avoided. The following is a summary of infestations as recorded in 1950:

Mountain Pine Beetle In Lodgepole Pine

A very encouraging development is the success that has been attained during the last five years in the control of the very aggressive and extensive outbreak of Dendroctonus monticolae on the

Caribou, Targhee, Teton, and Bridger National Forests, Teton National Park, and Jackson Hole National Monument in southeastern Idaho and northwestern Wyoming. About 500,000 acres were infested. A total of nearly 600,000 trees were killed by the beetles and about 240,000 of these trees were treated. Some of the heaviest losses occurred on the Caribou in areas where treatment was considered impractical, and where the infestation was allowed to "burn itself out", thus accounting for much of the difference in the numbers of infested and treated trees. The infestation on the National Forests has been practically eliminated and only about 2,000 trees in the National Park and Monument remain to be treated in the spring of 1951. This project is an excellent example of what can be accomplished in forest insect control by determined action on the part of land managing agencies, in spite of many difficulties.

In contrast, since 1945 a similar outbreak has developed on the Wasatch and Ashley National Forests in eastern Utah. It is estimated that between 90,000 and 120,000 trees have been killed each year for the last three years. The infestation still shows no sign of dying out from the action of natural control factors. A very large volume of timber on these forests is endangered by this outbreak but the value of this timber has not been considered great enough to warrant the expenditure of funds for control work, especially while there was need for putting all possible effort into the Targhee-Teton job.

Localized infestations of the mountain pine beetle were found on the Sawtooth and Minidoka National Forests in southern Idaho and action has been taken, or will be taken before the 1951 flight season, to treat the infested trees.

Mountain Pine Beetle In Jeffrey Pine

A localized outbreak of the mountain pine beetle in a pole stand of Jeffrey pine was examined and reported upon by our Berkeley, California laboratory. The infested timber is on privately owned land at the north end of Lake Tahoe on the Toiyabe National Forest in western Nevada. There are an estimated 1000 infested trees on about 3000 acres. The infestation appears to be very aggressive and may result in theloss of many additional trees in this scenic and highly used recreational area. The private owner, however, has shown no interest in applying control measures.

Black Hills Beetle In Ponderosa Pine

Local infestations of Dendroctonus ponderosae in ponderosa pine were found on the Dixie National Forest in southern Utah and on the Ashley National Forest in eastern Utah. It is expected that both of these infestations will be brought under control in 1951 by logging and direct control measures. Stands of ponderosa pine on both of these forests have been subject to rather severe losses at intervals in the past and will continue to require periodic treatment if this insect is to be kept under control.

Western Pine Beetle In Ponderosa Pine

There was evidence of a marked increase in the abundance of Dendroctonus brevicomis in stands of ponderosa pine on the Payette and Boise National Forests in southwestern Idaho in 1949 and 1950. An estimated 2000 infested trees are now present in one area on the Boise and a total of about 2800 in other areas on the Boise and Payette. The situation on these forests is complicated by the presence of Ips beetles in many of the infested trees and by the prevalence of a needle cast fungus disease throughout large areas of the ponderosa pine type. Large numbers of trees have undoubtedly been weakened by the fungus and made susceptible to attack by the western pine beetle. The Forest Service is attempting to sell the affected timber as rapidly as possible in the hope of harvesting these stands before an extensive beetle outbreak develops. Artificial control measures may be necessary as a means of holding the insects in check, pending completion of access roads that will permit logging operations to remove the insect-susceptible timber.

Engelmann Spruce Beetle In Engelmann Spruce

Local outbreaks of Dendroctonus engelmanni are present on the Dixie and Fishlake National Forests in southern Utah and the Payette National Forest in southwestern Idaho. Control work done in the fall of 1950 should check the infestations on the Dixie and Fishlake but early heavy snowfall on the Payette made it impossible to complete the work there. Outbreaks of this beetle nearly always develop in logging or windfall areas. Attempts are therefore being made to use trap logs as a means of removing part of the beetle population from logging areas each year in the hope that it will thus be possible to avoid the necessity for artificial control in these areas.

Douglas-fir Beetle In Douglas-fir

No formal surveys were conducted for this insect in 1950 but general observations indicated that infested trees were less abundant than in 1949. This beetle has caused a tremendous amount of loss in the Region in past years. The infestation is generally scattered over very large areas and with small groups of trees being killed each year. Artificial control would therefore be expensive. This tree species does, however, bring a high stumpage price and study should be given to developing effective measures for control of the beetle. Recent tests by the Coeur d'Alene Laboratory showed that the ortho-fuel oil mixture will penetrate the bark of Douglas-fir and kill beetle broods in infested logs.

Fir Scolytus In White Fir

The fir scolytus or fir engraver beetle, Scolytus ventralis, has killed a few of the white fir trees that were weakened by the fir needle miner in Bryce Canyon National Park. The National Park Service has taken aggressive action to cut and treat infested trees as fast

as they appear and has been successful in preventing what could easily have been a rather serious loss of trees along the Rainbow Point road in the Park. Large numbers of trees still appear very unthrifty as a result of defoliation and will require constant watching to detect attacks by the beetles. There did not appear to be any increase in the number of dying trees in 1950.

Fir Needleminer In White Fir

An outbreak of Epinotia meritana in white fir in Bryce Canyon National Park in southern Utah was brought to an end by airplane spraying with DDT in 1948 and 1949. The insect was present in limited numbers in 1950 but caused little or no damage. As noted above, however, large numbers of trees now have very sparce foliage and are left in a very weakened condition.

Lodgepole Needleminer In Lodgepole Pine

Recurvaria milleri, or a closly related species, has caused a considerable loss of foliage on lodgepole pine on the Minidoka National Forest in southern Idaho during the past 3 or 4 years. Little or no tree killing has resulted thus far and there is no definite evidence that bark beetles are increasing in the affected stands. An infestation was also reported on the Targhee National Forest in southeastern Idaho in 1950, involving about 10,000 acres.

Spruce Budworm On Douglas-fir, True Firs, and Spruce

Choristoneura fumiferana infestations were found on the Dixie (Powell) National Forest in southern Utah and on the Sawtooth and Boise National Forests in southern Idaho. No serious losses of timber are threatened at the present time. It is also probable that other infestations are present in stands of Douglas-fir and true fir in other parts of the Region.

Budworm On Lodgepole Pine

A budworm similar to the spruce budworm caused fairly heavy defoliation in stands of lodgepole pine on the eastern part of the Boise National Forest in 1950. This could be a serious threat to the extensive lodgepole stands in southern Idaho.

Tent Caterpillars On Cottonwood and Browse Plants

Malacosoma fragilis, and perhaps other species of this genus, is very abundant in southern Utah. Bitterbrush and other shrubs were heavily infested over a wide area. Large numbers of cottonwood trees along the Virgin River were defoliated. The National Park Service sprayed the trees on the valley floor in Zion National Park, applying DDT with a mist blower machine, with very good results.

Defoliator On Sagebrush

An interesting discovery in the fall of 1950 was that of a small caterpillar, probably a tortricid, defoliating sagebrush over a wide area in southern Idaho and northern Utah. In some areas the sagebrush is dying as a result of this defoliation. Although sagebrush is considered undesirable in areas where attempts are being made to reseed range lands, there are tremendous areas where the brush is important as a soil binder and for the protection that it gives to the small amount of grass remaining on the land. The insect may therefore prove to be quite important.

Spruce Mealybug On Engelmann Spruce

An infestation of a mealybug identified as Puto sp. was discovered in spruce stands on the Fishlake National Forest in 1939. The affected area was visited in 1950 and the insect was found to be still present in very large numbers but with no evidence of actual tree killing, although the trees appear to be very much weakened. Little is known about the life history or habits of this insect.

FOREST INSECT INFESTATIONS IN REGION 4 IN 1950

General Area	Locality	Insect	Host	Extent (Acreage)	Status of * Infestation	Recommended Action
Idaho						
Payette N.F.	Hard Creek	Eng. spruce beetle	Eng. spruce	600	400 trees infested	Control by ortho spraying
	Brundage Reservoir	"	"	3,750	1300 trees infested	Control by ortho spraying
	Lost Creek	Western pine beetle	Ponderosa pine	7,000	630 trees killed by 1st generation and 980 by 2nd gen. in 1950	Control by logging
	Middle Fork of Weiser R.	"	"	5,640	400 trees killed by 1st generation and 680 by 2nd generation	Control by logging
	Middle Fork of Weiser R.	Mountain pine beetle and Ips	"	5,640	1000 new attacks	None
Boise N.F.	Garden Valley	Western pine beetle	"	30,000	1500 trees killed by 1st generation and 1200 by 2nd gen. in 1950	Control by logging
	Deadwood Dam	"	"	6,000	2000 trees killed by 1st gen. and 2000 by 2nd gen. Loss of over 4 . million bd. ft. in 1950	Direct control pending construction of access road to remove susceptible timber

General Area	Locality	Insect	Host	Extent (A reage)	Status of Infestation	Recommended Action
Boise N. F. (cont.)	Deadwood River	Spruce budworm	Douglas fir	Unknown	Moderate defoliation in 1950	None
	Upper Deadwood Guard Station	Budworm	Lodgepole pine	Unknown	Moderate defoliation in 1950	None
Sawtooth N.F.	Local areas	Mountain pine beetle	"	750	350 new attacks in recreational areas along streams	Control by ortho-oil spraying
	Little Smokey	Spruce budworm	Douglas fir	Unknown	Moderate defoliation in 1950	None
Targhee N.F.	Several areas	Mountain pine beetle	Lodgepole pine	24,460	2540 new attacks	Fall and spring treatment
	Porcupine	Lodgepole needleminer	"	10,000	Reported as heavy	None
Caribou N.F.	Bitter Creek, McCoy Creek	Mountain Pine Beetle	"	600	54 new attacks	Fall treatment, completed
Minidoka N.F.	East Cassia	Lodgepole needleminer	"	Unknown	Heavy infestation in local areas	None
Wyoming						
Teton N.F.	Lost Creek	Mountain pine beetle	"	2,300	468 new attacks	Fall treatment, completed
Grand Teton Nat. Park		"	"	10,550	2,146 new attacks	Treatment in spring of 1951

General Area	Locality	Insect	Host	Extent (Acreage)	Status of Infestation	Recommended Action
Utah						
Ashley N.F.	North side of Forest	Mountain pine beetle	Lodgepole pine	50,000	75,000 new attacks	Control recommended but project of lower priority than some others
		Black Hills beetle	Ponderosa pine	7,700	250 new attacks	Control in spring of 1951 by ortho-oil spraying
Wasatch N.F.	North side of Forest	Mountain pine beetle	Lodgepole pine	36,000	16,000 new attacks	See Ashley N. F.
Fishlake N.F.	U M Pass	Eng. spruce beetle	Eng. spruce	30	810 stumps and cull logs infested	Fall treatment completed
	Thousand Lakes	Spruce mealybug	"	1,000	Heavy infestation trees weakened	None
Dixie N.F.	Mitchell Sawmill	Eng. spruce beetle	"	2,000	1637 trees, stumps and logs infested	Fall treatment completed
	Bower Flat	Black Hills beetle	Ponderosa pine	13,800	320 new attacks	Salvage logging after trees fade in 1951
	Bower Flat	Southwestern pine beetle	"	13,800	200 new attacks	Salvage logging after trees fade in 1951
	East Fork	Black Hills beetle	"	32,000	3,480 new attacks	Salvage logging and ortho-oil treatment
	East Fork	Spruce budworm	Douglas-fir white fir	Unknown	Light infestation	None

General Area	Locality	Insect	Host	Extent (Acreage)	Status of Infestation	Recommended Action
Bryce Canyon Nat. Park		Black Hills beetle	Ponderosa pine	10,000	200 new attacks	Maintenance control
Zion Nat. Park		Great Basin tent caterpillar	Cottonwood	1,000	General infestation	Mist-blower spraying with DDT
Cedar Breaks Nat. Mon.		Eng. Spruce beetle	Eng. spruce		150 infested trees and windfalls	
Nevada						
Toiyabe N.F.	Lake Tahoe Crystal Bay	Mountain pine beetle	Jeffrey pine	3,000	1,000 new attacks	Private owner evidently not interested in control

*Figures are survey estimates, except where control work has been completed, and are subject to considerable error.